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HUXLEY AFTER THIRTY YEARS

Huxley was born one hundred years ago, and died in 1895. His extraordinary merits as investigator and teacher are to-day somewhat obscured in the general reputation which he consciously sought when he dubbed himself "Darwin's bulldog." He was the man of action in science and a born fighter. In the face of odds which might have wrecked his fortunes, he elected, with fine gallantry, to be the great protagonist of evolution, of the almost self-evident proposition that the complex is evolved from the simple, the developed organism from the germinal protoplasm, man from the lower forms of life. The present status of Darwinism in America is sensational and spectacular, not really connected with the doctrine of evolution at all, proceeding rather from a vague notion that it exerts a brutalizing effect upon thought and conduct. The brutalizing process, unfortunately, is due to the intensity of the struggle for existence itself and not to Darwin's picture of it, which is the only satisfactory explanation we have of the pitiless phases of nature and of "man's inhumanity to man." Biologists, to-day, are more concerned with the epoch-making experiments of Abbot Mendel upon the spontaneous origin of variations in plants and animals. Darwin, the quiet, sedentary observer of the ways of plants and earthworms, actually saw the struggle as concerned, not so much with accidental enemies as with the limitations of environment. He stressed the enormous amount of energy expended by the living creature in fending and caring for its offspring and argued that it was the part of wisdom for man to do the same. It was Huxley who saw Nature as "a kind of fight," "a vast gladiatorial show," "a dismal cockpit." With no small sense of humor Huxley

argued, *per contra,* that man must deliberately run counter to Nature, if he is to achieve social progress and rise above the low estate from which he very obviously sprang. He defined himself as an indifferent naturalist, more concerned, indeed, for freedom of thought than for the advancement of science. His warfare with theologians was a mere phase of his innate love of fighting. Like Roosevelt, he was a social moralist, but with a keen sense of the humorous paradox implicit in the idea of social evolution, *viz.,* that, as Emerson put it, "the lives we are called upon to save are sometimes not worth the saving." Man, Huxley likened to a death-watch in a wooden clock, which must needs see the clock as a purposeful mechanism designed, like itself, to tick. The real purpose of the clock is beyond the insect's powers. Thus final causes remained for Huxley as inscrutable as did the ways of God and of Providence to the elder theologians. He had nothing of the superficial cocksureness of the crass materialist, who, as he maintained, begs the question as obviously as those who profess omniscience of the ways of God. The recent tributes of his surviving pupils[1] fortify our conviction that, of all great biological teachers, Huxley was surely the most vigorous and vitalizing, the one whom most of us would like best to have had as a moulding force in our lives.

Huxley started out in life as a naval surgeon. His three years' cruise on the surveying ship H. M. S. "Rattlesnake" (1847–50), like Darwin's cruise on the "Beagle," determined his career. The memoirs he published, when his ship went out of commission, secured to Huxley an immediate election to fellowship in the Royal Society, the award of the Society's medal and a position on its council; but in the lean years that followed, he had to eke out his livelihood by journalism and hack-work. After his appointment as professor of natural history in the School of Mines in Jermyn Street (1854) his salary was soon raised to £800 a year, and by 1855 he was able to marry. In 1853, he had written to his future wife, "I have become almost unable to exist without active intellectual excitement. I know that in this I can find peace and rest as in no other way. . . . My course in life is taken." At this time Sir Richard Owen was primate of British anatomists, and Huxley, as Keith tells us, "early realized that

[1] Nature, Lard., May 9, 1925, No. 2897, Suppl., 697–752.

there was neither peace nor place for him in England as long as Richard Owen occupied that throne." Owen had driven himself out of the Royal College of Surgeons by his attempt to make its museum subserve the interests of naturalists rather than of the medical profession, had installed himself as professor of palæontology in the School of Mines, and, to fortify his position, made a stand for taking man out of the Linnæan order of Primates and placing him in a distinct and special sub-class of Mammalia. Huxley proceeded to demolish Owen's position by showing up his glaring errors as to the anatomy of the anthropoid apes (the hippocampus minor episode), the archetypal skull and other matters of grave biologic import. By 1860, Huxley was lecturing to working men, on man's relation to the higher apes. In the same year came his dramatic encounter with Bishop Wilberforce at the British Association. One year before, Darwin's Origin of Species had been published by John Murray, and the entire edition of 1,250 copies was sold out on the day of publication (November 26, 1859). Huxley published "Man's Place in Nature" in 1863. Darwin's Descent of Man followed in 1871. Darwin was buried in Westminster Abbey on April 26, 1882. To the end of his days, Huxley continued to fight the battles of Darwinism, his leonine head splendidly erect, his bright sword flashing high in the air. Of his final disputations with Gladstone and others on theology, Professor Bateson archly doubts "whether the contestants went about their daily business loaded with quite the weight of extensive and peculiar learning which upon emergency they produced with perfect spontaneity to the confusion of their opponents." Let this give us pause, lest we forget Huxley's solid work in science and his ultimate views on life, religion and morals.

Huxley's greatest contributions to science were in the fields of anthropology, vertebrate palæontology and the morphology of invertebrate animals. He reëstablished the Linnæan status of man in the order of Primates, and classified the human race as fair and dark, with the Mongolian as an eruptive *tertium quid,* which accords with endocrine doctrine (Keith), and disposes of the old craniological shibboleth of long and round heads. With supreme good sense, he also declared the morphological distinc-

tion between Anglo-Saxons and Celts to be "mere sham and delusion." These were great simplifications in ethnology. If, as Sir Richard Burton maintained, the Anthropolical Society was then "a refuge to destitute truth" it was largely due to Huxley's courage that the science became respectable in England. In 1854, Huxley said that "he did not care for fossils." By 1855, he was studying fossil fishes, which occupied him for the next ten years. This led him to the fossil crocodiles, to the Dinosaurs as connecting links between birds and reptiles and to his favorite theme, the evolution of the horse. Of birds he said, "I shall treat them as extinct animals." He demolished Cuvier's law of correlation of structures, wrangled with Lord Kelvin about geological time, collaborated with Tyndall in the study of glaciers and established the fundamental principle that fossils in widely separated strata may be similar but not necessarily contemporaneous. During 1849–78, he made telling investigations of invertebrated animals, particularly the Hydrozoa. He covered the whole field of zoology, and Bateson rightly maintains that our present zoological nomenclature and classification are largely products of Huxley's industry and "organized common sense." His best book is "The Crayfish" (1880), which he develops as a physico-chemical mechanism, presumably "incapable of thought, since it has no language." In his "Anatomy of Invertebrated Animals" (1877) he argues that the expression "vital force" is mere question-begging, like "the horology of a clock" or Molière's *vis dormitiva* in opium. From first to last, Huxley maintained that "the logical foundations of natural selection are insecure," since selection cannot explain the origin of species unless experimental selective breeding can be made to produce species, *i.e.,* varieties that are infertile with one another. Darwin, in fact, saw selection and the struggle for existence "in a large and metaphorical sense," *i.e.,* as morphological relations. Huxley regarded selection as "a *vera causa* for morphological species, but not for physiological species." He cautioned Darwin about his chapter on Pangenesis, the publication of which revealed the fact that the great naturalist had never understood the meaning of cell division and was, indeed, incurious about the physiological mechanism of reproduction. Finally, where Dar-

win believed that Nature never makes jumps (*Natura non facit saltum*), Huxley in his observations on the spontaneous appearance of short-legged Ancon sheep and six-fingered children, insisted that "Nature does make jumps now and then." He thus grasped the significance of Mendelian variations or what he himself calls "the doctrine of transmutation."

Huxley created laboratory instruction in biology in England and left a host of devoted pupils. Professor Patrick Geddes relates that when he once happened to prove the master in error by a series of dissections, Huxley exclaimed: "'Pon my word, you're right! You've got me! I was wrong!" The essential bigness of the man is here revealed as surely as in Magendie's famous remark to his pupil, Claude Bernard: "You are a better investigator than I."

Huxley was the most vigorous and forceful English writer of his time. A few sentences, some of them as familiar as Shakespeare, will suffice to establish this proposition:

"I neither deny nor affirm the immortality of man. I see no reason for believing it, but, on the other hand, I have no means of disproving it."

"The great tragedy of science—the slaying of a beautiful hypothesis by an ugly fact."

"Belief in majorities is not rooted in my breast."

"There may be wisdom in a multitude of counsellors, but it is only in one or two of them."

"Government by average opinion is merely a circuitous method of going to the devil."

"Playing Providence is a game at which one is very apt to burn one's fingers."

"Of moral purpose, I see no trace in Nature. That is an article of exclusively human manufacture—and very much to our credit."

"What we call rational grounds for beliefs are often extremely irrational attempts to justify our instincts."

"Nature's discipline is not even a word and a blow, but the blow without the word."

"It is the customary fate of new truths to begin as heresies and end as superstitions."

"The scientific spirit is of more value than its products and irrationally held truths may be more harmful than reasoned errors."

"Ecclesiaticism in science is only unfaithfulness to truth."

"Science commits suicide when it adopts a creed."

"Better live a crossing-sweeper than die and be made to talk twaddle by a "medium" at a guinea a *séance.*"

"Science reckons many prophets, but there is not even a promise of a Messiah."

"Thoughtfulness for others, generosity, modesty and self-respect, are the qualities which make a real gentleman or lady, as distinguished from the veneered article which commonly goes by the name."

F. H. GARRISON

THE WESLEY M. CARPENTER LECTURE

ON THE UNDERSTANDING AND PRACTICAL MANAGEMENT OF NERVOUS PATIENTS, PARTICULARLY OF THE NERVOUS WOMAN

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(Delivered before the New York Academy of Medicine, October 15, 1925)

How best to try to be of help to "the nervous woman" is a problem that every general practitioner and, indeed, every medical or surgical specialist has, almost daily, to face. Even the well-trained neuro-psychiatrist does not lightly estimate the difficulties of this problem, for he, better than the rest of us, knows how various the task presented can be, how diverse are the remedial measures necessary for the successful management of different neurotic and psychotic states among women. When we recall that by the terms "neurosis" and "psychosis" we refer by no means to uniformities but to collections of unlike things, to groups and to subgroups of abnormal nervous and mental states of the most different sorts; when we ponder over the almost endless possibilities of human personalities that are provided for, indeed inescapably determined by the myriad shufflings of Mendelian unit characters in inheritance, on the one hand, and, on